



Earth Venture Mission – 2

Announcement of Opportunity

Evaluation Plan

September 3, 2015



Introduction

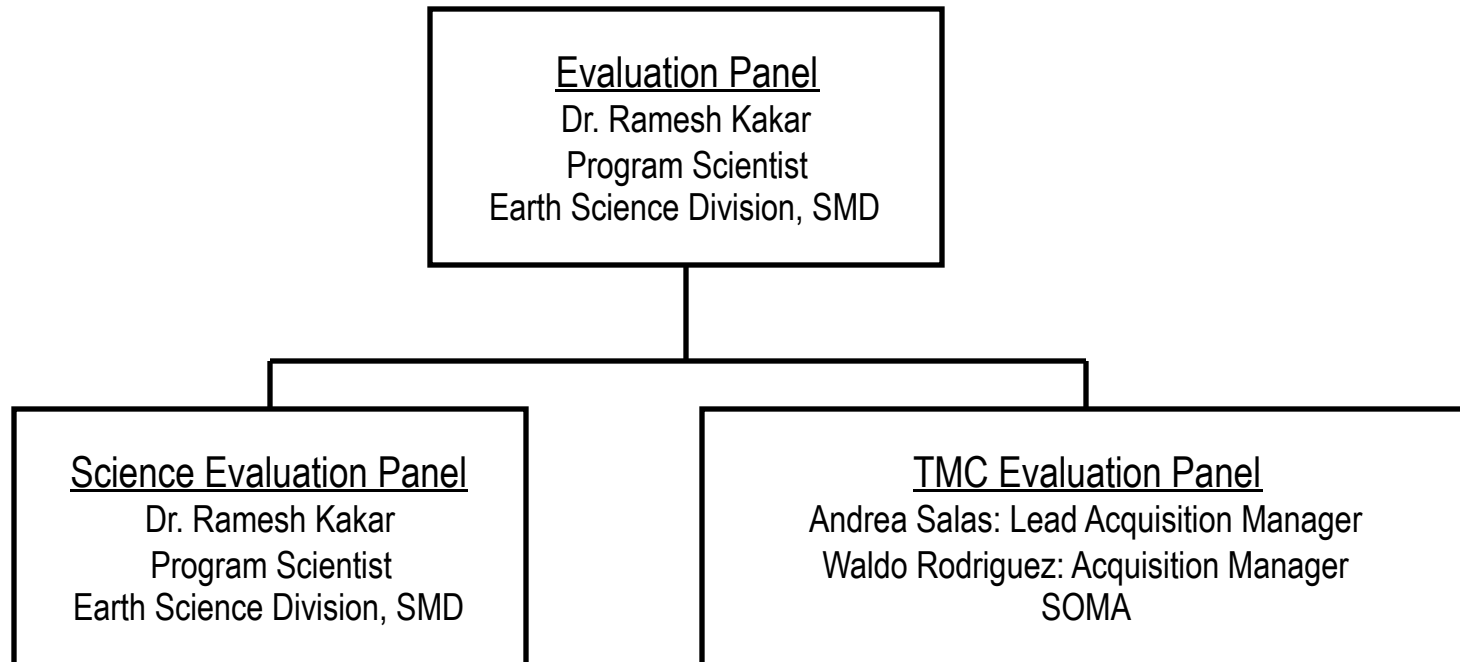


Introduction

- This Earth Venture Mission – 2 (EVM-2) Evaluation Plan covers evaluation information from the EVM-2 Announcement of Opportunity (AO) and from the evaluation processes conducted by the Science Panel and Technical Management and Cost (TMC) Panel.
 - The PI-Managed Mission Cost for this AO, including all mission phases, and including access to space (unless the access to space is contributed by a partner), is capped at \$166M FY 2018 dollars.
 - This Evaluation Plan describes a single-step process to selection.
 - The approval page for the EVM-2 Evaluation Plan is on page 58.
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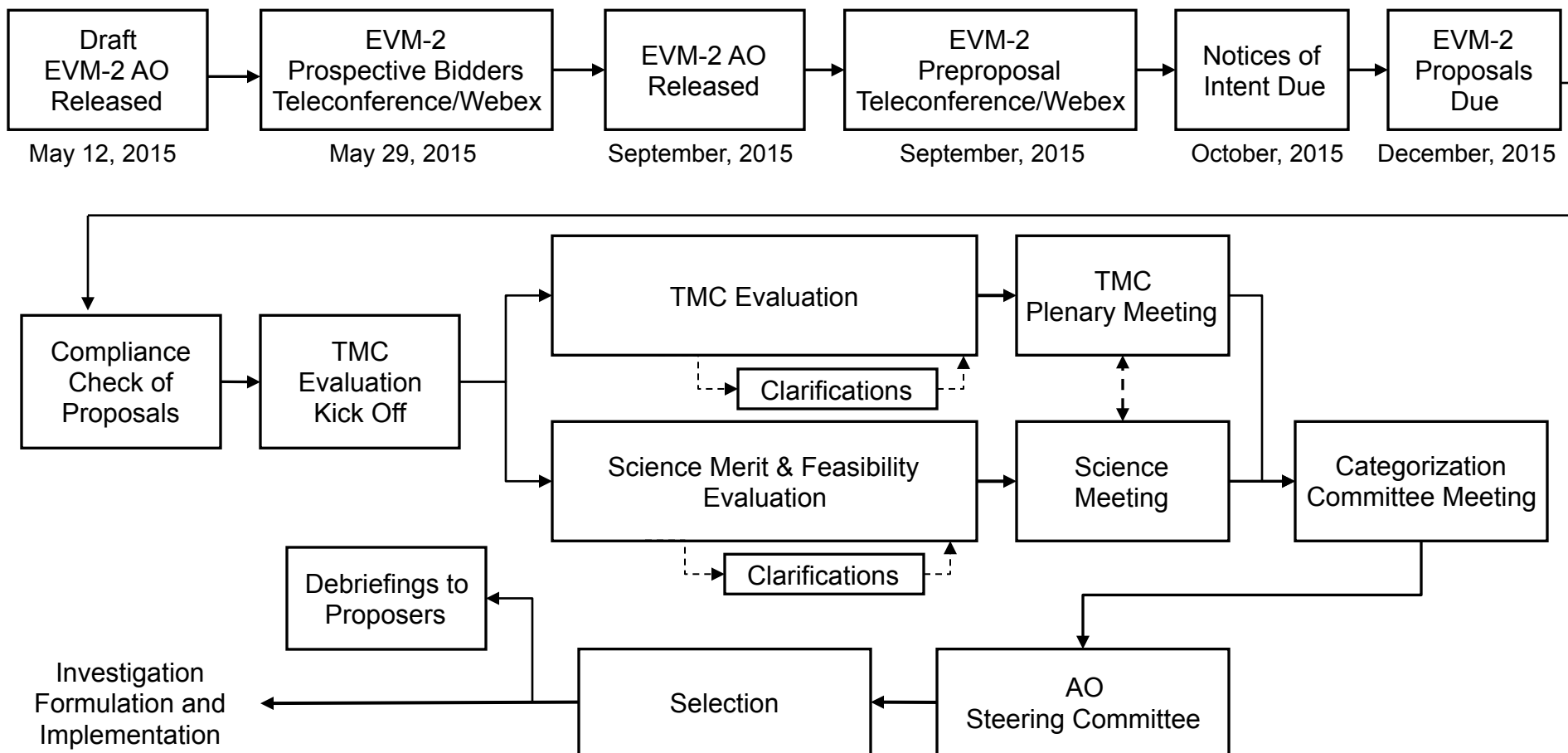


Evaluation Panel Organization





EVM-2 Proposal Evaluation Flow





General Evaluation Requirements and Compliance



Principles for Evaluation

- All proposals are to be treated fairly and equally.
- Merit is to be assessed on the basis of material in the proposal and clarification process.
- Ratings shall reflect the written strengths and weaknesses.
- Everyone involved in the review process is expected to act in an unbiased objective manner; advocacy for particular proposals is not appropriate.

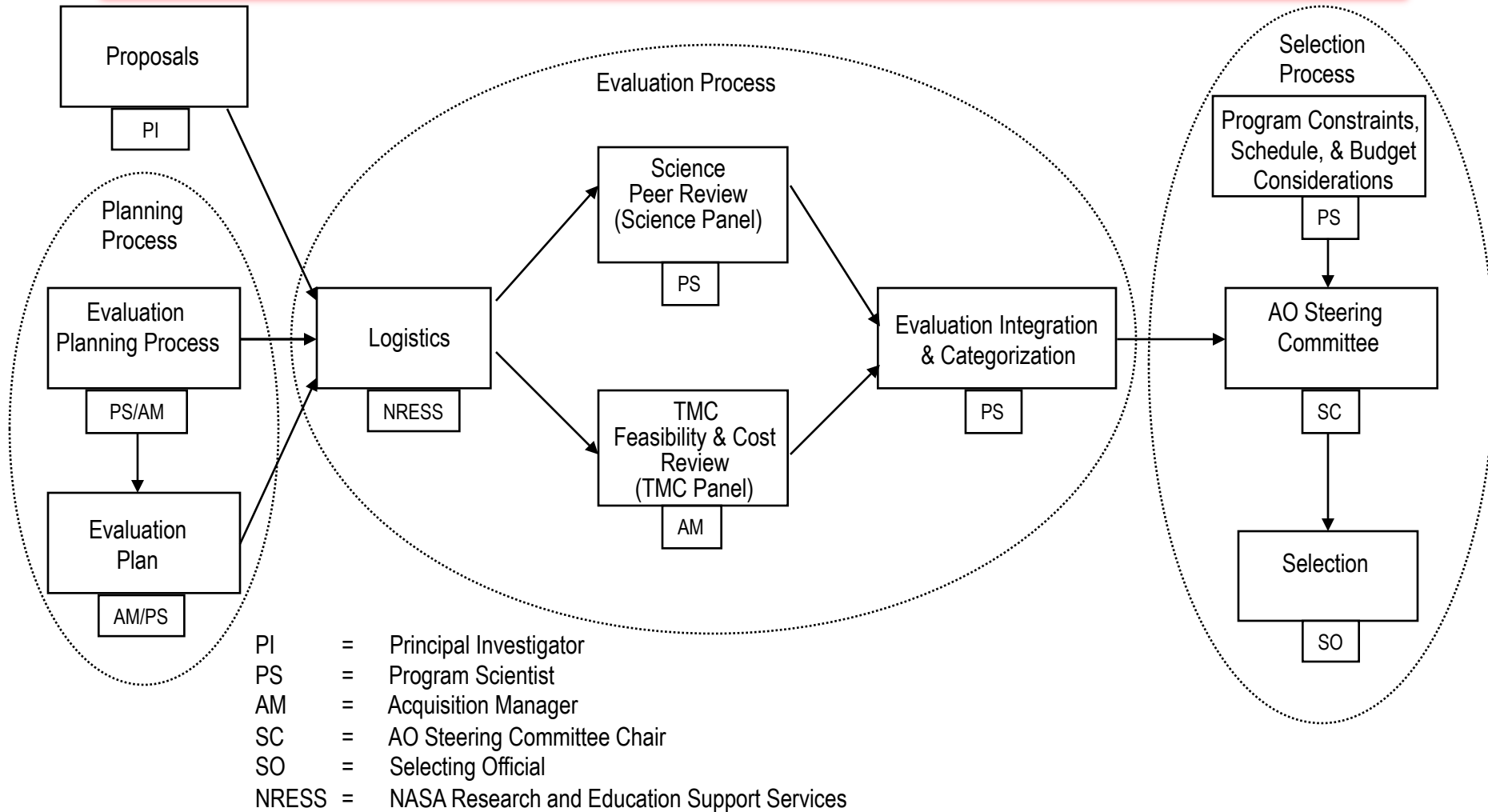


General Evaluation Ground Rules

- All proposals will be reviewed to uniform standards established in the Announcement of Opportunity (AO), and without comparison to other proposals.
- All evaluators will be experts in the areas that they evaluate.
- Specialist Evaluators (to provide special technical expertise to the TMC Panel) and non-panel/mail-in Reviewers (to provide special science expertise to the Science Panel) may be utilized, respectively, based on need for expertise in a specific technology/engineering or science that is proposed.



Evaluation Responsibilities





Conflicts of Interest (COI) Prevention Requirements

- NRESS will cross-check all the Science Panel members against the lists of personnel and organizations identified in each proposal submitted to determine whether any organizational Conflict of Interest (COI) exists.
- Cornell Technical Services (CTS) will cross-check all TMC Panel members against the lists of personnel and organizations identified in each proposal submitted to determine whether any organizational COI exists.
- Additionally, all evaluators must divulge any other financial, professional, or potential personal conflicts of interest, and whether they work for a profit-making company that directly competes with any profit-making proposing organization.
- All Civil Service evaluators will self-certify their COI status by reviewing a combined listing of individuals and organizations associated with the proposals. The TMC evaluators must notify the SOMA Acquisition Manager, in case there is a potential conflict. The Science evaluators must notify the Program Scientist, in case of a potential conflict.



Conflicts of Interest (COI) Prevention Requirements

- All known conflict of interest issues are documented and a COI Mitigation Plan is developed to minimize the likelihood that an issue will arise in the evaluation process. Any potential COI issue is discussed with the Program Scientist and the SMD Deputy Associate Administrator for Research and documented in the COI Mitigation Plan. All determinations regarding possible COIs that arise will be logged as an appendix to the COI Mitigation Plan.
 - If any previously unknown potential conflict of interest arises during the evaluation, the conflicted member(s) will be notified to stop evaluating proposals immediately, and the Panel Chair will be notified immediately. If a COI is confirmed, the conflicted member(s) will be immediately removed from the evaluation process, and steps will be taken expeditiously, to remove, mitigate, or accept any actual or potential bias imposed by the conflicted member(s). The steps will be documented in the COI Mitigation Plan.
 - Members of the Science and TMC panels are prohibited from contacting anyone outside their panel for scientific/technical input, or consultation, without the prior approval of the Program Scientist.
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Proprietary Data Protection Requirements

- All proposal and evaluation materials are considered proprietary.
 - Viewing of proposal materials will be only on a need-to-know basis.
 - Each evaluator will sign a Non-Disclosure Agreement (NDA) that must be on file at NRESS prior to any proposals being distributed to that evaluator.
 - The proposal materials that each evaluator has access to is recorded.
 - Evaluators are not permitted to discuss proposals with anyone outside their Science or TMC Panel.
 - All proprietary information that must be exchanged between evaluators will be exchanged *via* the secure NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES), *via* the secure Remote Evaluation System (RES), *via* the Large File Transfer (LFT) service, secure WebEx or *via* encrypted email, FedEx, fax, or regular mail. Weekly teleconferences among TMC Panel evaluators will be conducted *via* secure telephone lines.
 - Evaluators' electronic and paper evaluation materials will be deleted/destroyed when the evaluation process is complete. Archival copies will be maintained in the SOMA vault.
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Evaluation Criteria and Selection Factors: EVM-2 AO

- Evaluation Criteria from EVM-2 AO NNH15ZDA008J:
 1. Scientific Merit of the Proposed Investigation (section 7.2.2);
 2. Scientific Implementation Merit and Feasibility of the Proposed Investigation (section 7.2.3);
 3. TMC Feasibility of the Proposed Mission Implementation, including Cost Risk (section 7.2.4).
 - Weighting: the first criterion is weighted approximately 40%; the second and third criteria are weighted approximately 30% each.
 - Other Selection Factors (section 7.3):
 - Programmatic factors
 - PI-Managed Mission Cost
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Compliance Checklist EVM-2 AO Appendix F



Compliance Criteria

Administrative:

1. Electronic proposal received on time
2. Proposal on CD-ROM received on time
3. Original signatures of PI and of authorizing official included
4. PI commitment statement included
5. Meets page limits
6. Meets general requirements for format and completeness (one volume, maximum 55 lines text/page, maximum 15 characters/inch – approximately 12 point font)
7. Required appendices included; no additional appendices
8. Budgets are submitted in required formats
9. All individual team members who are named on the cover page indicate their commitment through NSPIRES
10. All export-controlled information has been identified
11. Restrictions Involving China acknowledged on Electronic Cover Page



Compliance Criteria

Scientific:

- 12. Addresses solicited science research programs
- 13. Requirements traceable from science to instruments to mission
- 14. Appropriate data archiving plan
- 15. Baseline science mission and threshold science mission defined



Compliance Criteria

Technical:

16. Complete spaceflight mission (Phases A-F) proposed
17. Team led by a single PI
18. PI-Managed Mission Cost within AO cost cap
19. Co-Investigator costs in budget
20. Required Investigation Start Date
21. Launch Readiness Date (LRD) prior to LRD deadline
22. Includes table describing non-U.S. participation
23. Includes letters of commitment from funding agencies for non-U.S. participating institutions
24. Includes letters of commitment from all U.S. organizations offering contributions
25. Includes letters of commitment from all major partners

Note: From EVM-2 AO Section 5.8.1.2, Major partners are the organizations, other than the proposing organization, responsible for providing science leadership, project management, system engineering, major hardware elements, science instruments, integration and test, mission operations, and other major products or services as defined by the proposer.



Science Evaluation Requirements



Science Panel Composition and Organization

- The Program Scientist leads the Science Panel.
 - Science evaluators are typically, but not exclusively, recruited from the academic, governmental, and industrial research communities.
 - The Science Panel evaluates Scientific Merit and Scientific Implementation Merit and Feasibility.
 - The science evaluation will be conducted *via* one Science Panel, but sub-panels may be employed, depending on the number and variety of proposed investigations.
 - Any sub-panel will be led by a NASA Civil Servant and may be co-chaired by a member from the scientific community.
 - Sub-panels may have an Executive Secretary.
 - Each proposal will be reviewed by assigned panel members.
 - The Lead Reviewer for each proposal will lead the discussion.
 - At the request of the Lead Reviewer, a Supporting Reviewer will take notes on the discussion.
 - The TMC Panel may provide comments and questions to the Science Panel.
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Science Panel Procedures

- Each member of the Science Panel will review proposals as directed by the Chair.
 - If special science expertise is required, the Science Panel may utilize non-panel/mail-in reviewers to assist with one or more proposals.
 - Non-panel/mail-in reviewers will evaluate only those parts of proposals pertinent to their scientific specialties.
 - Each proposal may be discussed by the reviewers in a telecon.
 - Findings in the form of Strengths and Weaknesses form the basis for initial panel discussions.
 - Each reviewer provides an individual review prior to the telecon.
 - The telecon discusses the proposal and the reviews by the individual reviewers including non-panel reviewers.
 - Following the telecon, the Lead Reviewer captures/synthesizes individual evaluations including discussion and generates the Draft Evaluation including draft findings.
 - The draft findings form the basis for the clarification of draft major weaknesses.
 - There is no overall merit grade assigned prior to receiving the responses to the clarification requests.
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Science Panel Procedures

- A Science Panel Meeting will be held upon completion of Science Evaluation for all proposals.
 - The Science Panel will compile all of the findings for each proposal.
 - For each proposal, the Chair or designated Lead Reviewer will lead the discussion, summarize the proposed investigation, and document the results.
 - The clarifications provided by the PIs will be considered and the findings will be adjusted if warranted.
 - If warranted, the Panel may reconsider evaluations at the Meeting.
 - Evaluations of all proposals are reviewed during the Science Panel Meeting to ensure that standards have been applied uniformly and in an appropriate and fair manner.
 - The Lead Reviewer synthesizes and documents Panel evaluations.



Science Panel Products

For each proposal, the Science evaluation will result in:

- Form A
 - Proposal title, PI name, and submitting organization;
 - Proposal summary;
 - Based on findings, Scientific Merit adjectival ratings from each evaluator, ranging from “Excellent” to “Poor”;
 - Summary rationale for the median rating;
 - Narrative findings, identified as major or minor strengths or weaknesses;
 - Comments to PI, comments to NASA. (optional)
 - Form B
 - Proposal title, PI name, and submitting organization;
 - Based on findings, Scientific Implementation Merit and Feasibility adjectival ratings from each evaluator, ranging from “Excellent” to “Poor”;
 - Summary rationale for the median rating;
 - Narrative findings, identified as major or minor strengths or weaknesses;
 - Comments to PI, comments to NASA. (optional)
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Science Panel Evaluation Factors

Criterion A: Scientific Merit of the Proposed Investigation:

- Factors from EVM-2 AO section 7.2.2
 - Factor A-1. Compelling nature and scientific priority of the proposed investigation's science goals and objectives
 - Factor A-2. Programmatic value of the proposed investigation
 - Factor A-3. Likelihood of scientific success
 - Factor A-4. Scientific value of the Threshold Science Mission



Science Panel Evaluation Factor A-1

Compelling nature and scientific priority of the proposed investigation's science goals and objectives. This factor includes the clarity of the goals and objectives; how well the goals and objectives reflect program, Agency, and National priorities; the potential scientific impact of the investigation on program, Agency, and National research and applications objectives; and the potential for fundamental progress, as well as filling gaps in our knowledge relative to the current state of the art.



Science Panel Evaluation Factor A-2

Programmatic value of the proposed investigation. This factor includes the unique value of the investigation to make scientific progress in the context of other ongoing and planned missions; the relationship to the other elements of NASA's science programs; how well the investigation may synergistically support ongoing or planned missions by NASA and other agencies; how well the mission may support key applications communities and inform decisions; and the necessity for a space mission to realize the goals and objectives.



Science Panel Evaluation Factor A-3

Likelihood of scientific success. This factor includes how well the anticipated measurements support the goals and objectives; the adequacy of the anticipated data to complete the investigation and meet the goals and objectives; and the appropriateness of the mission requirements for guiding development and ensuring scientific success.



Science Panel Evaluation Factor A-4

Scientific value of the Threshold Science Mission. This factor includes the scientific value of the Threshold Science Mission using the standards in the first factor of this section and whether that value is sufficient to justify the proposed cost of the mission.



Science Panel Evaluation Factors

Criterion B: Scientific Implementation Merit and Feasibility of the Proposed Investigation:

- Factors from EVM-2 AO section 7.2.3
 - Factor B-1. Merit of the instruments and mission design for addressing the research and applications goals and objectives
 - Factor B-2. Probability of technical success
 - Factor B-3. Merit of the data analysis, data availability, and data archiving plan
 - Factor B-4. Science resiliency
 - Factor B-5. Probability of science team success



Science Panel Evaluation Factor B-1

Merit of the instruments and mission design for addressing the research and applications goals and objectives. This factor includes the degree to which the proposed mission will address the goals and objectives; the appropriateness of the selected instruments and mission design for addressing the goals and objectives; the degree to which the proposed instruments and mission can provide the necessary data; and the sufficiency of the data gathered to complete the scientific investigation.



Science Panel Evaluation Factor B-2

Probability of technical success. This factor includes the maturity and technical readiness of the instruments or demonstration of a clear path to achieve necessary maturity; the adequacy of the plan to develop the instruments within the proposed cost and schedule; the robustness of those plans, including recognition of risks and mitigation plans for retiring those risks; the likelihood of success in developing any new technology that represents an untested advance in the state of the art; the ability of the development team - both institutions and individuals - to successfully implement those plans; and the likelihood of success for both the development and the operation of the instruments within the mission design.



Science Panel Evaluation Factor B-3

Merit of the data analysis, data availability, and data archiving plan.

This factor includes the merit of plans for data analysis and data archiving to meet the goals and objectives of the investigation; to result in the publication of science discoveries in the professional literature; to serve and support key applications communities; and to preserve data and analysis of value to the science community. Considerations in this factor include assessment of planning and budget adequacy and evidence of plans for well-documented, high-level data products and software usable to the entire research community and interested applications communities; assessment of adequate resources for physical interpretation of data and reporting scientific results in the professional literature (*e.g.*, refereed journals); and assessment of the proposed plan for the timely release of the data to the public domain for enlarging its science impact.



Science Panel Evaluation Factor B-4

Science resiliency. This factor includes both developmental and operational resiliency. Developmental resiliency includes the approach to descoping the Baseline Science Mission to the Threshold Science Mission in the event that development problems force reductions in scope. Operational resiliency includes the ability to withstand adverse circumstances, the capability to degrade gracefully, and the potential to recover from anomalies in flight.



Science Panel Evaluation Factor B-5

Probability of science team success. This factor will be evaluated by assessing the experience, expertise, and organizational structure of the science team and the mission design in light of any proposed instruments. The role of each Co-Investigator will be evaluated for necessary contributions to the proposed investigation; the inclusion of Co-Is who do not have a well defined and appropriate role may be cause for downgrading during evaluation.



Science Evaluation Product: Findings

- **Major Strength:** A facet of the implementation response that is judged to be of superior merit and can substantially contribute to the ability of the project to meet its scientific objectives.
 - **Major Weakness:** A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its scientific objectives.
 - **Minor Strength:** A strength that is worthy of note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of merit.
 - **Minor Weakness:** A weakness that is sufficiently worrisome to note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of merit.
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Form A and B Grade Definitions

- **Excellent:** A comprehensive, thorough, and compelling proposal of exceptional merit that fully responds to the objectives of the AO as documented by numerous and/or significant strengths and having no major weaknesses.
 - **Very Good:** A fully competent proposal of very high merit that fully responds to the objectives of the AO, whose strengths fully outbalance any weaknesses.
 - **Good:** A competent proposal that represents a credible response to the AO, having neither significant strengths nor weakness and/or whose strengths and weaknesses essentially balance.
 - **Fair:** A proposal that provides a nominal response to the AO, but whose weaknesses outweigh any perceived strengths.
 - **Poor:** A seriously flawed proposal having one or more major weaknesses (e.g., an inadequate or flawed plan of research or lack of focus on the objectives of the AO).
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TMC Evaluation Requirements



TMC Panel Composition and Organization

- The Acquisition Manager, who is a Civil Servant in the NASA Science Office for Mission Assessments (SOMA) at NASA Langley Research Center, leads the TMC panel.
 - NASA SOMA works directly for NASA Headquarters and is firewalled from the rest of NASA LaRC.
 - TMC Panel evaluators are a mix of the best non-conflicted contractors, consultants, and Civil Servants who are experts in their respective fields.
 - Evaluators read their assigned proposals.
 - Evaluators provide findings on their assigned proposals.
 - Evaluators provide ratings of proposals that reflect findings.
 - Additionally, specialist evaluators may be called upon in cases where technical expertise that is not represented on the panel is needed.
 - Specialist evaluators evaluate only those parts of a proposal that are specific to their particular expertise.
 - Specialist evaluators provide only findings; they do not provide ratings.
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TMC Panel Evaluation Factors

Criterion C: TMC Feasibility of the Proposed Mission Implementation, Including Cost Risk:

- Factors from EVM-2 AO section 7.2.4
 - Factor C-1. Adequacy and robustness of the instrument implementation plan
 - Factor C-2. Adequacy and robustness of the mission design and plan for mission operations
 - Factor C-3. Adequacy and robustness of the flight systems
 - Factor C-4. Adequacy and robustness of the management approach and schedule, including the capability of the management team
 - Factor C-5. Adequacy and robustness of the cost plan, including cost feasibility and cost risk



TMC Panel Evaluation Factor C-1

Adequacy and robustness of the instrument implementation plan. The maturity and technical readiness of the instrument complement will be assessed, as will the ability of the instruments to meet mission requirements. This factor includes an assessment of the instrument design, accommodation, interface, heritage, and technology readiness. This factor includes an assessment of the instrument hardware and software designs, heritage, and margins. This factor includes an assessment of the proposer's understanding of the processes, products, and activities required to accomplish development and integration of the instrument complement. This factor also includes adequacy of the plans for instrument systems engineering and for dealing with environmental concerns. This factor includes an assessment of plans for the development and use of new instrument technology, plans for advanced engineering developments, and the adequacy of backup plans to mature systems within the proposed cost and schedule when systems having a TRL less than 6 are proposed.



TMC Panel Evaluation Factor C-2

Adequacy and robustness of the mission design and plan for mission operations. This factor includes an assessment of the overall mission design and mission architecture, the spacecraft design and design margins (including margins for launch mass, delta-V, and propellant), the concept for mission operations (including communication, navigation/tracking/trajectory analysis, and ground systems and facilities), and the plans for launch services. This factor includes mission resiliency - the flexibility to recover from problems during both development and operations - including the technical resource reserves and margins, system and subsystem redundancy, and reductions and other changes that can be implemented without impact to the Baseline Science Mission.



TMC Panel Evaluation Factor C-3

Adequacy and robustness of the flight systems. This factor includes an assessment of the flight hardware and software designs, heritage, and margins. This factor includes an assessment of the proposer's understanding of the processes, products, and activities required to accomplish development and integration of all elements (flight systems, ground and data systems, etc.). This factor includes an assessment of the adequacy of the plans for spacecraft systems engineering, qualification, verification, mission assurance, launch operations, and entry/descent/landing (if applicable). This factor includes the plans for the development and use of new technology, plans for advanced engineering developments, and the adequacy of backup plans to ensure success of the mission when systems having a TRL less than 6 are proposed. The maturity and technical readiness of the spacecraft, subsystems, and operations systems will be assessed. The adequacy of the plan to mature systems within the proposed cost and schedule, the robustness of those plans, including recognition of risks and mitigation plans for retiring those risks, and the likelihood of success in developing any new technologies will be assessed.



TMC Panel Evaluation Factor C-4

Adequacy and robustness of the management approach and schedule, including the capability of the management team. This factor includes: the adequacy of the proposed organizational structure and WBS; the management approach including project level systems engineering; the roles, qualifications, and experience of the PI, PM, PSE, other named Key Management Team members, and implementing organization, mission management team, and known partners; the commitment, spaceflight experience, and relevant performance of the PI, PM, PSE, other named Key Management Team members, and implementing organization, mission management team, and known partners against the needs of the investigation; the commitments of partners and contributors; and the team's understanding of the scope of work covering all elements of the mission, including contributions. Also evaluated under this factor is the adequacy of the proposed risk management approach, including any risk mitigation plans for new technologies, any long-lead items, and the adequacy and availability of



TMC Panel Evaluation Factor C-4 cont'd

any required manufacturing, test, or other facilities. The approach to any proposed descoping of mission capabilities will be assessed against the proposed Baseline Science Mission. The plans for managing the risk of contributed critical goods and services will be assessed, including the plans for any international participation, the commitment of partners and contributors, as documented in Letters of Commitment, and the technical adequacy of contingency plans, where they exist, for coping with the failure of a proposed cooperative arrangement or contribution. This factor also includes assessment of elements such as the relationship of the work to the project schedule, the project element interdependencies, the associated schedule margins, and an assessment of the likelihood of launching by the proposed launch date. Also evaluated under this factor are the proposed project and schedule management tools to be used on the project.



TMC Panel Evaluation Factor C-5

Adequacy and robustness of the cost plan, including cost feasibility and cost risk. This factor includes elements such as cost, cost risk, cost realism, and cost completeness including assessment of the basis of estimate, the adequacy of the approach, the methods and rationale used to develop the estimated cost, the discussion of cost risks, the allocation of cost reserves by phase, and the team's understanding of the scope of work (covering all elements of the mission, including contributions). The adequacy of the cost reserves will be evaluated; understanding of the cost risks will be assessed. This factor also includes an assessment of the proposed cost relative to estimates generated using parametric models and analogies. Also evaluated under this factor are the proposed cost management tools to be used on the project.



TMC Panel Product: Form C

For each proposal, the TMC evaluation will result in a Form C that contains:

- Proposal title, PI name, and submitting organization;
- An adjectival risk rating from each evaluator of “LOW Risk”, “MEDIUM Risk” or “HIGH Risk” for the TMC Feasibility of the Proposed Mission Implementation, Including Cost Risk that is derived based on the findings;
- Summary rationale for the median risk rating;
- Narrative findings, identified as major or minor strengths or weaknesses;
- Comments to the PI, comments to NASA, comments to the Science Panel. (optional)



TMC Evaluation Product: Findings

Major and minor strengths and weaknesses are defined as follows:

- **Major Strength:** A facet of the implementation response that is judged to be well above expectations and can substantially contribute to the ability of the project to meet its technical requirements on schedule and within cost.
- **Minor Strength:** A strength that is worthy of note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.
- **Major Weakness:** A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its technical objectives on schedule and within cost.
- **Minor Weakness:** A weakness that is sufficiently worrisome to note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.

*Note: Findings that are considered “as expected” are not documented in the Form C.



TMC Evaluation Product: Risk Ratings

Based on the narrative findings, each proposal will be assigned one of three risk ratings, defined as follows:

- **LOW Risk:** There are no problems evident in the proposal that cannot be normally solved within the time and cost proposed. Problems are not of sufficient magnitude to doubt the Proposer's capability to accomplish the investigation well within available resources.
- **MEDIUM Risk:** Problems have been identified, but are considered within the proposal team's capabilities to correct within available resources with good management and application of effective engineering resources. Mission design may be complex and resources tight.
- **HIGH Risk:** One or more problems are of sufficient magnitude and complexity as to be deemed unsolvable within the available resources.

*Note: Only Major Findings are considered in the risk rating.



TMC Cost Analysis

- Initial cost analyses will be accomplished on the basis of information provided in the proposals (consistency, completeness, proposed basis of estimate, contributions, use full cost accounting, maintenance of reserve levels, and cost management, etc.).
 - Cost will be evaluated with at least one cost model.
 - Cost threats, risks, and risk mitigations will be analyzed.
 - Cost realism (a.k.a. “cost risk”) is based on models, analogies, heritage, and grass roots information from proposals.
 - Cost Realism is reported as an adjectival rating, ranging from “LOW Risk” to “HIGH Risk” on a five-point scale.
 - Draft Cost Evaluation Summaries and Form Cs will be completed prior to the Plenary.
 - During the TMC Plenary, the entire panel will participate in Cost deliberations:
 - All information from the entire evaluation process will be considered in the final cost assessment.
 - Significant findings from the Cost Evaluation Summaries will be documented in the Cost Factor on Form C and considered in the Form C risk rating.
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Cost Risk Definitions

Cost Risk	Definition
LOW	<p><i>Cost Envelope is adequate – expect success.</i></p> <ul style="list-style-type: none"> - The proposer's estimate (<i>with reserves</i>) agrees closely with the work, staffing, and schedule proposed, fits within the program cap and any other budget constraints, and is verified by TMC independent analysis. - The proposed cost reserve is adequate to address cost threats identified by TMC, and to fund unexpected needs. - The resource management plan indicates strong, active management of resources throughout implementation.
LOW/ MEDIUM	<p><i>Cost Envelope is somewhat tight, but project should succeed.</i></p> <ul style="list-style-type: none"> - TMC identified one or more significant cost threats or weaknesses with regard to the proposer's estimate, cost reserves, and/or resource management. Overall impact of identified threats and weaknesses should be manageable. - TMC independent analysis verifies proposer's costs.
MEDIUM	<p><i>Cost Envelope is tight. Success requires diligent oversight of resources.</i></p> <ul style="list-style-type: none"> - TMC identified one or more significant cost threats or weaknesses with regard to the proposer's estimate, cost reserves, and/or resource management. Cost impact of threats may be underestimated by proposer. Overall impact of identified threats and weaknesses should be manageable. - TMC independent analysis verifies some or most of proposer's costs.
MEDIUM /HIGH	<p><i>Cost Envelope is very tight. It is likely the project will require more funding.</i></p> <ul style="list-style-type: none"> - TMC identified one or more major cost threats or weaknesses with regard to the proposer's estimate, cost reserves, and/or resource management. Cost impact of threats appears underestimated by proposer. Overall impact of identified threats and weaknesses will be challenging to manage within funding and/or schedule constraints. - TMC independent analysis could not verify significant elements of proposer's costs.
HIGH	<p><i>Project exceeds the Cost Envelope and is expected to require substantially more funding.</i></p> <ul style="list-style-type: none"> - TMC identified one or more major cost threats or weaknesses in the proposer's estimate, cost reserves, and/or resource management. Overall impact of identified threats and weaknesses exceeds proposed resources and/or available resources to cover them. Threats are not acknowledged, or are underestimated by proposer. - TMC independent analysis could not verify proposer's costs.



Cost Threat Matrix

- The *likelihood* and *cost impact*, if any, of each weakness is stated as “This finding represents a cost threat assessed to have an Unlikely/Possible/Likely/Very Likely/Almost Certain likelihood of a Very Minimal/Minimal/Limited/Moderate/Significant/Very Significant cost impact being realized during development and/or operations.”
- The *likelihood* is the probability range that the *cost impact* will materialize.
- The *cost impact* is the current best estimate of the range of costs to mitigate the realized threat.
- The cost threat matrix below defines the adjectives used to describe the *likelihood* and *cost impact*.
- The minimum cost threat threshold for Phases A/B/C/D and Phase E is set at \$1M.

		Cost Impact (CI, % of PI-Managed Mission cost to complete Phases A/B/C/D or % of Phase E not including unencumbered cost reserves)					
		Very Minimal (1% < CI ≤ 2.5%)	Minimal (2.5% < CI ≤ 5%)	Limited (5% < CI ≤ 10%)	Moderate (10% < CI ≤ 15%)	Significant (15% < CI ≤ 20%)	Very Significant (CI > 20%)
Likelihood (L, %)	Almost Certain (L > 80%)						
	Very Likely (60% < L ≤ 80%)						
	Likely (40% < L ≤ 60%)						
	Possible (20% < L ≤ 40%)						
	Unlikely (L ≤ 20%)						

Note: For each proposal the percentages in the above table will be converted to dollars by the cost estimator.



Student Collaboration

- Proposals may define a Student Collaboration (SC) that is a separate part of the proposed investigation; see Requirements 50 and 51 in EVM-2 AO Section 5.5.3.
- Per the EVM-2 AO sections 7.2.3 and 7.2.4, Student Collaboration proposals, if any, will be evaluated only for the impact they have on science implementation and overall mission feasibility to the extent that they are not separable; student collaboration proposals will not be penalized for any inherent higher cost, schedule, or technical risk, as long as the student collaboration is shown to be clearly separable from the implementation of the Baseline Mission. The intrinsic merit of student collaborations will not be evaluated at this time.



Evaluation: Clarifications from Proposers

NASA will request clarification of Potential Major Weaknesses (PMWs) in the TMC Feasibility of the Proposed Mission Implementation, Including Cost Risk that have been identified by the evaluation panels for this criterion. NASA may request clarifications for PMWs on the Scientific Implementation Merit and Feasibility of the Proposed Investigation criterion.

- NASA will request such clarification uniformly, from all proposers.
- All requests for clarification from NASA, and the proposer's response, will be in writing.
- The ability of proposers to provide clarification to NASA is extremely limited, as NASA does not intend to enter into discussions with proposers.
- PIs whose proposals have no (PMWs) will receive an email informing them.
- The form of the clarifications is strictly limited to a few types of responses:
 - Identification of the locations in the proposal (page(s), section(s), line(s)) where the PMW is addressed.
 - Noting that the PMW is not addressed in the proposal.
 - Stating that the PMW is invalidated by information that is common knowledge and is therefore not included in the proposal.
 - Stating that the analysis leading to this PMW is incorrect and identifying a place in the proposal where data supporting a correct analysis may be found.
 - Stating that a typographical error appears in the proposal and that the correct data is available elsewhere inside or outside of the proposal.

The PI will be given at least 24 hours to respond to the request for PMWs clarification. Any response that goes beyond a clarification will be deleted and will not be shown to the evaluation panel.



Categorization



Categorization

- Upon completion of the evaluations, the results will be presented to the Categorization Committee composed solely of Civil Servants and appointed by the SMD Deputy Associate Administrator.
- This committee will consider the peer review results and, based on the evaluations, will categorize each proposal according to procedures required by NFS 1872.403-1(e). The categories are defined as:
 - Category I. Well conceived and scientifically and technically sound investigations pertinent to the goals of the program and the AO's objectives, and offered by a competent investigator from an institution capable of supplying the necessary support to ensure that any essential flight hardware or other support can be delivered on time and data that can be properly reduced, analyzed, interpreted, and published in a reasonable time. Investigations in Category I are recommended for acceptance and normally will be displaced only by other Category I investigations.



Categorization (continued)

- Category II. Well conceived and scientifically or technically sound investigations which are recommended for acceptance, but at a lower priority than Category I.
- Category III. Scientifically or technically sound investigations, which require further development. Category III investigations may be funded for development and may be reconsidered at a later time for the same or other opportunities.
- Category IV. Proposed investigations which are recommended for rejection for the particular opportunity under consideration, whatever the reason.



Evaluation Process Conclusion

- Once Categorization has been completed, the Evaluation is considered complete unless questioned by a subsequent Steering Committee review.
- The AO Steering Committee will conduct an independent assessment of the evaluation and categorization processes regarding their compliance to established policies and practices, as well as the completeness, self- consistency, and adequacy of all supporting materials.



Selection Factors

- As stated in Section 7.3 of the EVM-2 AO, the Selection Official may take into account a wide range of programmatic factors in deciding whether or not to select any proposals and in selecting among top-rated proposals, including, but not limited to, planning and policy considerations, available funding, programmatic merit and risk of any proposed partnerships, and maintaining a programmatic and scientific balance across SMD.
- After selection is announced, a Transition Briefing will be provided by a subset of the TMC Panel to Civil Servants in the Program Office and at Headquarters who have implementation responsibilities.



Approval

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